Amendments to the Claims:

This following listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) An apparatus for measurement of Raman scattered radiation comprising[[;]]:

a) ~~at least~~ one or more than one source of electromagnetic radiation for producing an electromagnetic radiation beam characterized by a narrow spectral width;

b) an integrating cavity ~~having~~ comprising:

(i) an interior and an exterior, wherein a sample is placed in said interior, said integrating cavity having ~~at least~~ one or more than one port for insertion of said sample in said interior and for transmission of said electromagnetic radiation into and out from said interior, said ~~at least~~ one or more than one port extending from said exterior to said interior of said integrating cavity, and

(ii) a radiation expanding element for expanding said electromagnetic radiation before said electromagnetic radiation beam comes into contact with said sample;

c) a first optical element for transmitting said electromagnetic radiation into said interior of said integrating cavity through said ~~at least~~ one or more than one port;

d) a second optical element for collecting Raman scattered electromagnetic radiation from said sample through said ~~at least~~ one or more than one port;

e) a spectrum analyzer for determining spectral composition of said Raman scattered electromagnetic radiation;

f) a detector for measuring said Raman scattered electromagnetic radiation; and

g) a system for determining a concentration of ~~at least~~ one or more than one chemical compound in said sample from ~~measured~~ Raman scattered electromagnetic radiation measured by said detector.

2. (Original) The apparatus according to claim 1 wherein said source of electromagnetic radiation is selected from the group consisting of a laser, a light emitting diode (LED) and a superluminescent diode.

3. (Cancelled)

4. (Currently Amended) The apparatus according to claim 1, wherein said integrating cavity ~~is comprised of~~ comprises electromagnetic radiation scattering material of sufficient thickness to back scatter a sufficient amount of electromagnetic radiation into said interior of said integrating cavity to enhance production, and analysis, of Raman scattered radiation with said spectrum analyzer and detector.

5. (Currently Amended) The apparatus according to claim 4, wherein said electromagnetic radiation scattering material ~~is comprised of~~ comprises electromagnetic radiation scattering material selected from the group consisting of: an electromagnetic radiation scattering opalescent glass, an electromagnetic radiation scattering material comprising polytetrafluoroethylene (PTFE), ~~an electromagnetic radiation scattering SPECTRALON™, an electromagnetic radiation scattering TEFLON™,~~ and an electromagnetic radiation scattering ceramic~~, and any other material of similar optical properties~~.

6. (Currently Amended) The apparatus according to claim 1, wherein said interior is delimited by an internal surface which ~~is comprised of~~ comprises an electromagnetic radiation scattering coating of sufficient thickness to back scatter a sufficient amount of electromagnetic radiation into said interior of said integrating cavity to enhance production and analysis of Raman scattered radiation with said spectrum analyzer and detector.

7. (Currently Amended) The apparatus according to claim 6, wherein said electromagnetic radiation scattering coating ~~is comprised of~~ comprises an electromagnetic radiation scattering

material selected from the group consisting of: an electromagnetic radiation scattering material comprising polytetrafluoroethylene (PTFE)~~, an electromagnetic radiation scattering SPECTRALON™, an electromagnetic radiation scattering TEFLON™,~~ an electromagnetic radiation scattering ceramic, a layer of electromagnetic radiation scattering MgO, and $BaSO_4$~~, and any other material of similar optical properties used for surface coating of integrating spheres~~.

8. (Currently Amended) The apparatus according to claim 1, wherein said interior is delimited by an internal surface ~~which is comprised of~~ comprising a redistribution structure and coated with ~~at least~~ one or more than one thin layer of an optical material that enhances reflection.

9. (Currently Amended) The apparatus according to claim 8, wherein said ~~optic~~ optical material is selected from a group consisting of: aluminum, silver, gold, and multiple dielectric layers~~, and any other layers used in the field for reflection enhancement and surface protection~~.

10. (Currently Amended) The apparatus according to claim 1, wherein said integrating cavity is made of a material transparent ~~for~~ to electromagnetic radiation with an internal, an external or both internal and external surface comprising a redistribution structure, wherein said internal, said external, or both of said internal and external surface is covered with ~~at least~~ one or more than one layer of a reflection enhancing material selected from group consisting of: aluminum, silver gold, and multiple dielectric layers~~, and any other layers used in the field for reflection enhancement and surface protection~~.

11. (Original) The apparatus according to claim 1 wherein said first optical element and said second optical element are selected from the group consisting of a lens, a mirror, a radiation guiding element, and a combination thereof.

12. (Original) The apparatus according to claim 11 wherein said radiation guiding element is an optic fiber.

13. (Currently Amended) The apparatus according to claim 1, wherein said spectrum analyzer is selected from the group consisting of a spectrometer, [[A]] a Fourier transform spectrometer, a turntable filter, an acousto-optic turntable, and a variable transmittance filter.

14. (Original) The apparatus according to claim 1 wherein said detector is selected from the group consisting of a linear diode array, a CCD, a photodiode, and a photomultiplier.

15. (Currently Amended) The apparatus according to claim 1, wherein said system for determining a concentration of ~~at least~~ one or more than one chemical compound in said sample from ~~measured~~ Raman scattered electromagnetic radiation measured by said detector comprises a computer comprising ~~at least~~ one or more than one calibration algorithm.

16. (Currently Amended) The apparatus according to claim [[3]] 1, wherein said radiation expanding element is selected from a diffusion wall and a lens or a combination thereof.

17. (Currently Amended) The apparatus according to claim 16, wherein said diffusion wall comprises ~~at least~~ one or more than one aperture, said ~~at least~~ one or more than one aperture located outside a cross sectional area of said electromagnetic radiation impinging on said diffusion wall.

18. (Currently Amended) The apparatus according to claim 16, wherein said diffusion wall comprises a material selected from the group consisting of: an electromagnetic radiation scattering material comprising polytetrafluoroethylene (PTFE), ~~an electromagnetic radiation scattering SPECTRALON™, an electromagnetic radiation scattering TEFLON™,~~ an electromagnetic radiation scattering ceramic, an electromagnetic radiation scattering opalescent glass, a coated glass, a coated fused silica, a coated quartz, a coated sapphire, a coated transparent plastic, an electromagnetic radiation non-absorbing material, and one or more of ~~said~~ a material with a redistribution structure on one or both surfaces.

19. (Currently Amended) The apparatus according to claim 1, wherein said integrating cavity comprises ~~at least 2~~ two or more than two ports and wherein said first and said second optical element are each coupled with a different port.

20. (Currently Amended) The apparatus according to claim 18, wherein ~~the~~ said integrating cavity comprises two or more than two ports coupled to said first optical element ~~is coupled to integrating cavity with two or more ports~~.

21. (Currently Amended) The apparatus according to claim 18, wherein said integrating cavity comprises two or more than two ports ~~there are more than two ports~~ coupled to said second optical element.

22. (Currently Amended) The apparatus according to claim 1, wherein ~~said interior~~ said radiation expanding element comprises ~~at least~~ one or more than one diffusing wall separating said interior of said integrating cavity into a diffusing chamber and a sample chamber, said sample chamber for receiving said sample, said diffusion chamber and said sample chamber each comprising ~~at least~~ one or more than one port extending from said exterior to said interior and wherein said first optical element is optically coupled with said diffusing chamber and said second optical element is optically coupled with said sample chamber.

23. (Currently Amended) The apparatus according to claim 22, wherein said diffusion wall comprises a material selected from the group consisting of an electromagnetic radiation scattering opalescent glass, an electromagenetic scattering material comprising polytetrafluoroethylene (PTFE), ~~SPECTRALON™, TEFLON™,~~ an electromagnetic radiation scattering ceramic, a coated glass, a coated fused silica, a coated quartz, a coated sapphire, a coated transparent plastic, an electromagnetic radiation non-absorbing material, and one or more of ~~said~~ a material with a redistribution structure on one or both surfaces.

24. (Currently Amended) A method for measuring a concentration of one or more than one chemical ~~compounds~~ compound in a sample using Raman scattering comprising[[;]]:

a) placing said sample within an integrating cavity comprising:

i) an interior and an exterior, wherein a sample is placed in said interior of said integrating cavity, said integrating cavity having one or more than one port for insertion of said sample in said interior and for transmission of electromagnetic radiation into and out from said integrating cavity, said one or more than one port extending from said exterior to said interior of said integrating cavity, and

ii) a radiation expanding element for expanding said electromagnetic radiation beam before said electromagnetic radiation comes into contact with said sample;

b) generating an electromagnetic radiation beam characterized by a narrow spectral width and transmitting said electromagnetic radiation into said integrating cavity;

c) directing ~~spreading~~ said electromagnetic radiation beam through said integrating cavity so that before said electromagnetic radiation beam comes into contact with said sample ~~to produce~~ an expanded beam having a specific radiation power density smaller than a predetermined tolerance limit for said sample is produced;

d) collecting ~~said~~ Raman scattered electromagnetic radiation from said sample within said integrating cavity;

e) spectrally decomposing said Raman scattered electromagnetic radiation;

f) measuring said Raman scattered electromagnetic radiation; and

g) determining said concentration of said one or more than one chemical ~~compounds~~ compound.

25. (Currently Amended) The method according to claim [[17]] 24, wherein said sample is a digit.

26. (Currently Amended) The method according to claim [[18]] 25, wherein said digit is a finger.

27. (Currently Amended) The method according to claim [[19]] 26, wherein said ~~known substance~~ one or more than one chemical compound is glucose.

28. (Currently Amended) The method according to claim [[17]] 24, wherein said radiation expanding element of said integrating cavity comprises ~~at least~~ one or more than one diffusing wall separating said interior of said integrating cavity into a diffusion chamber and a sample chamber, said diffusion chamber and said sample chamber each comprising ~~at least~~ one or more than one port extending from said exterior to said interior and wherein in step b) said sample is placed in said sample chamber, in step c) said electromagnetic radiation is transmitted into said diffusing chamber through said ~~at least~~ one or more than one port of said diffusing chamber and in step d) said Raman scattered electromagnetic radiation is collected from said sample through said ~~at least~~ one or more than one port of said sample chamber.

29. (Currently Amended) An integrating cavity comprising:

a) an interior and an exterior, wherein a sample is placed in said interior of said integrating cavity, said integrating cavity having ~~at least~~ one or more than one port for insertion of said sample in said interior and for transmission of electromagnetic radiation into and out ~~from~~ of said integrating cavity, said ~~at least~~ one or more than one port extending from said exterior to said interior of said integrating cavity, and

b) a radiation expanding element for expanding said electromagnetic radiation ~~beam~~ before said electromagnetic radiation beam comes into contact with said sample.

30. (Cancelled)